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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,958	08/26/2003	Hanching G. Wang	03-0484	5239
22462	7590	03/22/2006	EXAMINER	
GATES & COOPER LLP HOWARD HUGHES CENTER 6701 CENTER DRIVE WEST, SUITE 1050 LOS ANGELES, CA 90045			BEHNCKE, CHRISTINE M	
			ART UNIT	PAPER NUMBER
			3661	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/647,958

Applicant(s)

WANG ET AL.

Examiner

Christine M. Behncke

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-11,13-22 and 24-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31-57 is/are allowed.
- 6) ☒ Claim(s) 1,3-5,11,13-15,21,22,24 and 25 is/are rejected.
- 7) ☒ Claim(s) 6-10,16-20 and 26-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/26/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This office action is in response to the Amendment and Remarks filed 10 January 2006, in which claims 1, 3-11, 13-22, and 24-57 were presented for examination.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-5, 11, 13-15, 21, 22, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGovern et al. US Patent Application Publication No. 2003/0164429.

3. **(Claims 1 and 11)** McGovern et al. discloses a method and apparatus comprising means for: generating a plurality of spacecraft measurements (Figures 3, 9

and [0031]); fitting the plurality of spacecraft momentum measurements to a parametric model of a spacecraft momentum profile having a time period of  $t_p$  ([0034] and [0065]-[0070]); determining the momentum of the spacecraft from the parametric model ([0066]); generating an estimate of a momentum error at least in part from the determined momentum of the spacecraft ([0033] and [0068]); wherein the generating a plurality of spacecraft momentum measurements comprises: measuring the spacecraft angular rate ([0035]); measuring an angular rate of a momentum storage device disposed in the satellite (Abstract); and computing the momentum of the spacecraft at least in part from the spacecraft angular rate, the momentum storage device angular rate, and an inertia of the spacecraft and an inertia of the momentum storage device (Abstract, [0035] and [0036]). McGovern does not explicitly disclose dumping the momentum when the measured momentum differs from the estimated momentum profile, however it would have been obvious to one of ordinary skill in the art, at the time of the invention, to minimize the momentum error by removing the calculated momentum error from the momentum profile through means such as the satellite actuators so as to not unbalance the spacecraft.

4. **(Claims 3 and 13)** McGovern et al. further discloses a step of filtering the plurality of spacecraft momentum measurements before fitting the spacecraft momentum measurements to the parametric model ([0079]).

5. **(Claims 4 and 14)** McGovern et al. further discloses wherein the periodic spacecraft momentum profile comprises a plurality of segments, each segment modeled by a set of basis functions ([0075]).

6. **(Claims 5 and 15)** McGovern et al. further discloses wherein the set of basis functions is selected from the group consisting of: a polynomial and a Fourier series ([0075]).

7. **(Claim 21)** McGovern discloses an apparatus for estimating a momentum to be removed from a spacecraft: a first module for accepting a plurality of spacecraft momentum measurements and for fitting the plurality of momentum measurements to a parametric model of a spacecraft momentum profile having a time period  $t_p$  ([0034] and [0065]-[0070]); a second module for determining the momentum of the spacecraft from the parametric model ([0066]); a third module for generating an estimate of the momentum error from the measured momentum and the profile from the at least in part from the determined momentum of the spacecraft ([0033] and [0068]); and a filter for filtering the plurality of spacecraft momentum measurements before fitting the spacecraft momentum measurements to the parametric model ([0079]). McGovern does not explicitly disclose dumping the momentum when the measured momentum differs from the estimated momentum profile, however it would have been obvious to one of ordinary skill in the art, at the time of the invention, to minimize the momentum error by removing the calculated momentum error from the momentum profile through means such as the satellite actuators so as to not unbalance the spacecraft.

8. **(Claim 22)** McGovern further discloses a processor () and wherein the first module, the second module, and the third module are software modules comprising instructions performed by the processor (Figures 1, 4 and [0081]).

9. **(Claim 24)** McGovern further discloses wherein the periodic spacecraft momentum profile comprises a plurality of segments, each segment modeled by a set of basis functions ([0075]).
10. **(Claim 25)** McGovern further discloses wherein the set of basis functions is selected from the group consisting of: a polynomial and a Fourier series ([0075]).

***Allowable Subject Matter***

11. **Claims 6-10, 16-20 and 26-30** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
12. **Claims 31-57** are allowed.

***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine M. Behncke whose telephone number is (571) 272-8103. The examiner can normally be reached on Monday - Friday 8:30 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3661

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

3-19-2006

  
THOMAS G. BLUM  
SUPERVISORY PATENT EXAMINE  
GROUP 3600